

Fortran 90 Seminar 16.2.94

On February 16th 1994, the Numerical Algorithms Group, in co-operation with the Humboldt-Universität, staged a one day seminar on the subject of Fortran 90.

Fortran is one of the oldest high-level programming languages still in current use and has seen many changes in its 30 years. The previous standard, Fortran 77, has been around for a long time. It was born into a world dominated by the dinosaurs of computing - memory was measured in kilobytes not megabytes, input was via punched paper tape or punched card and the smallest computer was the size of a desk, as was the printer that stood next to it.

Fortran 90 was born into a very different world. Today's computer systems provide facilities unheard of in 1977. Perhaps more importantly, data can come from many different sources, in many different formats. The physical strictures placed on programmers in 1977 have now been replaced by economic strictures - programs must be written effectively, run efficiently and be easily maintainable.

It is a fact that, for all the new programming languages that have appeared since Fortran first saw the light of day, none have been able to dethrone it as undisputed king of mathematical and numerical applications. Since the early 1970s, NAG and Fortran have been synonymous and it was no great surprise that 1991 saw NAG release the worlds first full ISO/ANSI standard Fortran 90 compiler. Continual development has kept NAG at the forefront of Fortran 90 technology.

The Fortran community is, however, quite conservative and Fortran 90 has found it difficult to move the "77ers" away from their beloved language, even if it is to convert them to a more modern Fortran! The seminar was, therefore, designed to give Fortran 77 users the impetus to move to the new standard and to convince users of other languages of the advantages of using Fortran 90.

The first part of the seminar was given over to people who are deeply involved in the development of Fortran 90 compilers and tools - Iain Fleming from NAG and Tim Bartle from Salford Software (who have developed the PC version for NAG).

Their talks gave the participants a good insight into the features offered by Fortran 90, both as a language and its application in a compiler. The new additions to Fortran 90 are not only in the language set but also

NAG looks forward to returning to the Humboldt-Universität to present the worlds first Fortran 2000 compiler. We hope to see you there.

in the structure of the source code, which improve readability and maintainability. In this respect, NAG provides a range of tools that help in formalising Fortran 90 source code. The possibilities offered by these tools (for example, to restructure Fortran 77 fixed-format source code into Fortran 90 free-format) was the subject of the second talk presented by Iain Fleming.

The second part of the seminar was devoted to the users of Fortran 90. The success or failure of a product is determined by the users and not by the producers. The first of the two users to speak was Peter Thomas from the Institute for Space Technology at the Technische Universität München, who uses and teaches Fortran on a daily basis. Now that he has a stable and efficient compiler, he will convert his training completely to Fortran 90. The advantages offered to him are such that no other language even comes into question. The high quality of the NAG support service was also instrumental in his choice.

The second of the two users to speak was Dr. Günter Schumacher of the Universität Karlsruhe, whose work there is in the area of scientific computation and numerical procedures. His talk dealt with the requirements of his work and presented a very well structured argument as to why Fortran 90 is the only programming language which can be seriously considered for mathematical computation.

The message is clear - Fortran is very much alive. Fortran 90 has an ISO/ANSI standard, providing a portability and compatibility not available to any other language. It offers programmers a powerful command set with all the features expected of a modern programming language. It is being backed by all the major manufacturers who are all attempting to provide their own Fortran 90 compilers (NAG has already sold its technology to SUN & Microsoft).

The Fortran committees are already discussing the content of the next Fortran standard. Work is already being carried out to determine which obsolescent features should be left out and which new features should be added.

Another sure sign of the acceptance of Fortran 90 is the steadily increasing number of books available which deal in one way or another with the new standard. There are now quite a number of books available in English, e.g. "Fortran 90 Explained" by Metcalf & Reid, and at least 3 books in German, including a very comprehensive reference work.

Books List (German) :

"Fortran 90 - Ein Nachschlagwerk" by Wilhelm Gehrke
(RRZN Hannover)

"Fortran 90 - Programmieren mit dem neuen Standard" by Brigitte and Rainer Wojcieszynski
(Addison-Wesley, ISBN 3-89319-600-5)

"Software Entwicklung in Fortran 90" by Christoph Überhuber and Peter Meditz
(Springer Verlag, ISBN 3-211-82450-2).

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